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Sustainable Forest Management:

The Role of the USDA Forest Service, Northeastern Area and State Forestry Agencies

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The Role of the USDA Forest Service, Northeastern Area and State Forestry Agencies in Sustainable Forest Management

April 1999

"No one can predict the future—how people will live, or what exactly they will need—but it is possible to foresee the likely effects of some of today's decisions and to make choices that honor the interests of present and future generations" (President's Council on Sustainable Development 1996).

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Introduction

Sustainability is an overarching goal for a diverse array of public and private organizations, agencies, and individuals, and it is an extraordinary challenge. The collective efforts of all are needed to mobilize the skills, capacity, and resources to achieve this goal. This paper provides a brief discussion of sustainability and sustainable forest management and outlines the particular steps the USDA Forest Service, State and Private Forestry, Northeastern Area, and the 20 State forestry agencies in the Northeastern Area Association of State Foresters (NAASF) will take to move toward this desired condition. The implementation measures and associated actions are intended to provide focus to efforts of the Federal-State partnership and to spur outreach, partnerships, and collaboration with those who have overlapping responsibilities and concerns, such as the Northeastern and North Central Research Stations and the Eastern Region of the Forest Service, other State and Federal agencies operating in the Northeast and Midwest, Native American Tribes, communities, municipalities, universities, professional associations, forest-based industries, environmental groups, and forest landowners.

Sustainable Forest Management

Sustainability is a complex idea involving economic, environmental, and social factors. The terms forest sustainability, sustainable forestry, and sustainable forest management are often used interchangeably and are closely linked to definitions of sustainable development. Commonly cited definitions for all these terms generally include or imply the following elements: the continued existence and use of forests to meet human physical, economic, and social needs; the desire to preserve the health of forest ecosystems in perpetuity; and the ethical choice of preserving options for future generations while meeting the needs of the present (see Definitions, page 3).

Sustainability concerns the interactions between humans and forests in wildland, rural, urban, and suburban settings, and the effects of this interaction at local, landscape, regional, national, and global scales. In discussions of sustainability, forests are defined as ecosystems dominated by trees but with other components of nature, such as shrubs, herbs, mammals, birds, insects, microorganisms, soil, air, and water, and the interactive processes that bind them together. The concept of sustainability incorporates the knowledge that forests play a major role in sustaining human health and welfare. They contribute to the long-term viability of watersheds, communities, and economies.

The social, cultural, and economic realities of urban, suburban, and rural communities have a far reaching influence on the continued existence, use, and condition of forests. To operate sustainably, forest managers may need to devote as much time to convening and facilitating agreement on the desired future conditions of the forests under their stewardship or authority as on planning and implementing the technical methods to produce the desired goods and services in an environmentally sound manner. Sustainability depends on citizens and stakeholders adopting stewardship and individual responsibility as tenets by which to live and moving from conflict to collaboration (President's Council on Sustainable Development 1996).

The Northeastern Area's *Five Year Strategic Plan 1995-1999* (USDA Forest Service 1995) identified healthy sustainable forests, sustainable economic development, and information resource management as the major strategic issues for the period. The NAASF review of the Northeastern Area in July 1997 recognized the continued importance of sustainability issues and the need to increase the general understanding and acceptance of sustainability concepts through the next planning cycle. Major NAASF review recommendations included the following.

1. The 7 criteria of sustainability developed through the Montreal Process (see The Montreal Process, page 4) should be adopted as sustainable forest management goals for the 20-State region.
2. Monitoring and assessment of forest resource conditions should be conducted based on these criteria, and work should begin in the Northeast and Midwest to integrate the use of the Montreal Process criteria and indicators into Forest Service programs and policies.

The recommendations are consistent with the Forest Service's *Natural Resource Agenda for the 21st Century* released March 2, 1998 (Dombeck 1998), and with the National Association of State Foresters (NASF) White Paper *Forests for a Sustainable Future: The Use of Criteria and Indicators in Sustainable Forest Management* (NASF 1997). These two documents highlight the need to fully fund forest inventory and monitoring programs and to use measurements such as the Montreal Process criteria and indicators (C&I). The *Natural Resource Agenda* committed the Forest Service to work with State, local, and other partners to use C&I to report on the health of all forested landscapes across the nation by 2003.

Definitions

Sustainable development ". . . to meet the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987).

Forest sustainability ". . . the management and utilization of forests to meet the needs of the present without compromising the ability of future generations to meet their own needs. The needs can be met by integrating the reforestation, growing, nurturing, and harvesting of trees for useful products, with conservation of soil, air, and water quality as well as maintenance of plant and animal diversity and aesthetics" (National Hardwood Lumber Association 1994).

"Since sustainable forest management is only possible within the ultimate constraints and limits imposed by the ecosystem, sustainability should be viewed as the degree of overlap between ecological possibilities and socially desired benefits of forests" (Noss 1993).

A healthy forest has the following four characteristics that relate to forest sustainability: "(1) the physical environment, biotic resources, and trophic network to support productive forests; (2) resistance to catastrophic change and the ability to recover on the landscape level; (3) a functional equilibrium between supply and demand of essential resources (water, nutrients, light, and growing space) for major portions of the vegetation; and (4) a diversity of seral stages and stand structures that provide habitat for any native species and all essential ecosystem processes" (Kolb and others 1994).

Sustainable forestry ". . . means managing our forests to meet the needs of the present without compromising the ability of future generations to meet their own needs by practicing a land stewardship ethic which integrates the growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air, and water quality, wildlife and fish habitat, and aesthetics" (American Forest and Paper Association 1995).

"Forestry in this sense is scientific knowledge guided by a land ethic or ethos in its application to the art and business of manipulating the forested portion of the ecosystem in a manner that assures the maintenance and sustainability of biological diversity and ecological productivity throughout the centuries. Inherent in sustainable forestry are intuitive reality checks and a great deal of humility. The outcome of such forestry will be the perpetual production of amenities, services, and goods for human use" (Maser 1994).

Sustainable forest management ". . . enhances and maintains the biological productivity and diversity of Maine's forests, thereby assuring economic and social opportunities for this and future generations. It takes place in a large ecological and social context and achieves a balance between landowners' objectives and society's needs" (Maine Council on Sustainable Forest Management 1996).

The Montreal Process

In 1992 the United Nations sponsored a Conference on Environment and Development in Rio de Janeiro, Brazil, now commonly know as the "Earth Summit." At the summit over 144 nations recognized the importance of sustainably managing all types of forests in order to meet the needs of present and future generations by adopting a nonbinding Statement of Forest Principles.

The reference to the Montreal Process comes from efforts following the Earth Summit. The United Nations Conference on Security and Cooperation in Europe sponsored an international seminar in Montreal, Canada, on Sustainable Development of Boreal and Temperate Forests. This conference provided a forum for discussions on how to measure and track progress toward the goal of sustainability. These discussions provided the conceptual basis for subsequent regional and international initiatives to develop *criteria*, which provide a large-scale reflection of public values, and *indicators*, which provide a means of measuring forest conditions and tracking changes in environmental, economic, and social conditions.

In 1995, the United States endorsed a statement of political commitment to use criteria and indicators to track progress in sustainability. The signatory document, known as the "Santiago Declaration," includes a comprehensive set of 7 criteria and 67 indicators for the conservation and sustainable management of temperate and boreal forests. Signatories to this nonbinding declaration include Argentina, Canada, Chile, China, Japan, the Republic of Korea, Mexico, New Zealand, the Russian Federation, the United States, and Uruguay. The countries contain 90 percent of the world's temperate and boreal forests—60 percent of all forests on the globe. They account for 45 percent of related world trade and 35 percent of the world's population.

The United States issued *The First Approximation Report for Sustainable Forest Management: Report of the United States on the Criteria and Indicators for the Sustainable Management of Temperate and Boreal Forests* on June 6, 1997 (USDA Forest Service 1997). This report laid a foundation for an ongoing process to assess forest management and monitoring capability across the country. A consolidated report from all Montreal Process Working Group countries was presented to the Eleventh World Forestry Congress in Antalya, Turkey, in October 1997.

Implementation Measures

The role of the Northeastern Area and the States in sustainable forest management is presented by four basic implementation approaches and associated actions, described in detail below.

1. Adopt criteria and indicators as a framework for sustainability.
2. Support inventory, monitoring, and assessment programs and partnerships.
3. Evaluate existing and potential State and Private Forestry conservation, management, and protection services and partnerships.
4. Provide opportunities for professional and public education and communication.

Adopt Criteria and Indicators as a Framework for Sustainability

Many people in the Northeast and Midwest are asking whether or not forests are being managed sustainably. They wonder if taxpayer dollars are committed wisely. They ask whether forestry efforts today are achieving economic, environmental, and socially desired outcomes. Sustainability C&I are a means of gauging success by measuring real world outcomes in lieu of program outputs. Criteria are goals or categories which reflect broad public values and recognized scientific principles. Indicators within each category provide a means of measuring forest conditions and tracking changes in environmental, economic, and social conditions. Together they provide a framework which resource managers and citizens can use to systematically establish and clarify desired economic, social, and environmental conditions and to track progress in meeting those conditions. Progress in sustainability is determined by evaluating the sum of the indicators for each criterion and all criteria together, rather than any one in isolation.

A sustainability framework with 7 criteria and 67 indicators was developed by the Montreal Process Working Group to measure conditions associated with temperate and boreal forests in the member countries (see The Montreal Process, page 3 and appendix A).

The seven Montreal Process criteria are these:

1. Conservation of biological diversity,
2. Maintenance of the productive capacity of forest ecosystems,
3. Maintenance of forest ecosystem health and vitality,
4. Conservation and maintenance of soil and water resources,
5. Maintenance of the forest contribution to global carbon cycles,
6. Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies, and
7. Maintenance of the legal, institutional, and economic frameworks for forest conservation and sustainable management.

Indicators associated with criteria 1-5 relate specifically to forest conditions, attributes, or functions which generally can be quantified. Those associated with criterion 6 relate to the values and benefits associated with the environmental and socioeconomic goods and services that forests provide. Criterion 7 addresses the overall policy framework supporting the conservation and sustainable management of forests in an area. Criteria 6 and 7, which characterize the deliberate interactions between people, their communities, and the environment, include many descriptive or qualitative measures as well as some quantitative ones.

The Northeastern Area and the NAASF have determined that the 7 Montreal Process criteria are useful goals to adopt in the 20-State region. The Northeastern Area and the States will work cooperatively with national efforts to identify common measurement and reporting protocols and to tie their work into the assessment required in 2003 by the Renewable Resources Planning Act of 1974. In this way, the national assessment process can become an important pathway for the flow of information at the State, regional, and national level, and it will allow the aggregate of individual monitoring efforts to be greater than the sum of the parts.

Clearly efficiencies can be achieved by cooperating with national and international efforts. For example, for even fairly simple indicators such as "extent of area by forest type relative to total forest area," there are variable ways to proceed. Questions to be answered include which forest type definitions should be used; are shrublands, savannah, and regenerating clearcuts included; and what point in time is used to determine the total forest area. The Northeastern Area and the States will cooperatively evaluate each of the Montreal Process indicators for its value in guiding regional and State level programs and policy initiatives. Evaluation will consider things like technical soundness, feasibility of implementation at a variety of scales, and the degree to which standardization is necessary and possible among States as well.

Adoption of a C&I framework at the regional, State, or local level does not automatically translate into more intensive measurement and assessment of all of the Montreal Process indicators. Decision makers at these levels could decide that the national evaluation provides enough detail for their purposes; therefore, no additional data collection or assessment is necessary. They could decide that more intensive measurement and assessment of the national indicators would meet their needs, or that different or additional indicators and measurements are needed to answer recurrent questions which cannot be assessed on a national basis. Table 1 sets out examples of indicators useful at different scales.

Each of the 20 States currently measure various indicators of sustainability. The Northeastern Area and the States will collectively look to other projects such as the Maine Council on Sustainable Forest Management, the Minnesota Environmental Indicators Initiative, the Mid-Atlantic Integrated Assessment, and the Great Lakes Assessment for proven methods of measuring environmental, social, and economic outcomes in a bottom-up fashion to meet State and regional needs. They will see what lessons can be learned from private initiatives such the American Forest and Paper Association's Sustainable Forestry Initiative, the Forest Stewardship Council principles and criteria effort, and the National Forestry Association Green Tag Forestry efforts.

Table 1. Example of indicators useful for assessments at various scales. Example indicators were drawn from the Montreal Process, and State and local efforts. Montreal Process indicators are identified by an asterisk (*).

Indicator	National	Regional	State or within State
	Biological Diversity		
Extent of area by forest type relative to total forest area*	X	X	X
Extent of area in permanent natural openings to total forest area			X
Number of forest-dependent species that occupy a small portion of their former range*	X	X	
	Legal, Institutional, and Economic Framework		
Encourage best practice codes for forest management*	X		X
Percent compliance with best management practices			X

Developing and measuring criteria and indicators is only half the job of implementing the C&I framework. The other half is obtaining technical review of the synthesized information and involving public and private agencies, organizations, and stakeholders in the use of this information. One must accept that there are uncertainties associated with inventory and monitoring, and some subjectivity is involved in determining the significance of research and monitoring results. In addition, the process of making decisions based on this information requires citizen and stakeholder involvement with the public agencies responsible for implementing public laws and regulations and with policy-making bodies. Federal, State, and local agency personnel have a significant charge to be conveners and facilitators in the interpretation and use of this information, always keeping in mind the highly charged dynamics involved in balancing the needs of individuals with those of the public good.

Adoption of the C&I framework for sustainability will be accomplished by the following.

- The Northeastern Area will establish funding sources for the long-term coordination and staffing of a forest sustainability information clearinghouse for States, the Forest Service, other public agencies, nongovernment groups, and stakeholder groups.

- The Northeastern Area will develop a report on the status of forest health and sustainability in the 20-State region covering all lands and ownerships, using C&I as an outline.
- Use information from the Sustainability report to provide a context for the NA's Strategic Plan: 2000-2004.
- The Northeastern Area will bring together recommendations for regional and State level indicators for each of the seven criteria. These will include cross-state protocols, a regional reporting process, a reporting cycle, and the staff expertise, time, GIS, analytical, and decision-support capabilities needed to implement them. Appropriate linkages among State, regional, and national indicators and timetables will be identified.

Support Inventory, Monitoring, and Assessment Programs and Partnerships

The purpose of inventory, monitoring, and assessment is to provide information which allows citizens and resource managers to accurately evaluate the status of forest health and the effects of forest management, and to debate policy options using common data. Public agencies have a particular role to play in ensuring that information collected is appropriate, complete, accurate, and unbiased, and that it is assessed using the best available science. The *First Approximation Report for Sustainable Forest Management* (USDA Forest Service 1997) highlighted the need for current public forest inventory and monitoring systems to coordinate on the definition, methodology, and protocols used in inventory and monitoring in order to capture the entire picture of forestry as it is practiced in this country.

There are a variety of inventory, monitoring and assessment activities on-going within the Forest Service. The Forest Inventory and Monitoring Program (FI&M) is the primary source of information on forests across the Northeast and Midwest. Through a recent reorganization, this one program combines the elements of the former, Forest Inventory and Analysis (FIA) and Forest Health Monitoring (FHM) programs. The elements originating in FIA provide information such as the extent, age, and distribution of forest cover types, timber growth and yield, and forest landowners intentions. An annualized inventory cycle is being phased in for these elements. The inventory previously used a 10 year cycle. The elements originating in FHM include annual measurement of forest health indicators and stressors. These measures will be fully implemented in the next few years over all ownerships in the 20-State Region. In addition, national forests and many State forestry agencies conduct multiple resource inventories and monitoring to support project level, watershed and local planning efforts. There may be similar opportunities to reduce duplication and make operational and statistical connections among these systems and other Federal and State agency efforts.

Assessments involve the compilation and synthesis of social, economic, physical, and biological information, including information on past and present conditions, cause and effect relationships, trends, and forces of change, all of which may affect our choice of actions. They provide a context for decision making but do not prescribe particular treatments or land allocations.

The Forest and Rangelands Renewable Resources Planning Act of 1974 (RPA) requires the Secretary of Agriculture to prepare an assessment of the nation's renewable resources on all forest and rangelands every 10 years and to prepare and transmit an updated national renewable resources program every 5 years. The desired situation is that national, regional, and State inventory, monitoring, and assessment activities are linked sufficiently through standard definitions and information protocols. This will make information readily available for addressing policy questions as they arise and will improve efficiency (time, labor, cost) and limit redundancy among all levels of government. The next RPA assessment will provide a framework for reporting on C&I. Implementation of the C&I effort in cooperation with the RPA reporting process across the 20-State region will improve the information base for decision making and give greater visibility to regional concerns at the national level.

The Forest Service *National Hierarchical Framework of Ecological Units* (Cleland and others 1997) is a tool that will be used in inventory, monitoring, and assessment throughout the 20-State region (appendix B). The eight-level spatial hierarchy of ecological units forms the basis for the framework by using a standardized regionalization, classification, and mapping system to stratify the earth into progressively smaller areas of increasingly uniform ecological potential. These units provide a means of integrating research, inventory, and monitoring information from multiple disciplines and organizations for assessments across political, administrative, and jurisdictional boundaries.

Much of the data needed to measure and assess sustainability resides within other agencies and organizations. Measurement and assessment of C&I across the 20-State region can be used as a vehicle to build on existing partnerships and engage new partners in cooperatives to inventory, monitor, and assess forest conditions and opportunities for sustainable forestry. State forest resource planning programs provide a similar opportunity to capitalize on current interest in C&I to get a more complete picture of resource management at the State level. Of continuing importance is the need to work in partnership with other agencies and organizations to compile and analyze existing data, and to identify and prioritize the acquisition of new information.

The Forest Service and the States cooperate with a variety of partners on various national, regional, subregional, statewide, and local monitoring projects. The Northeastern Area can work on the regional scale and coordinate with the national office to ensure compatibility. Relationships can be strengthened with the USDA Natural Resources Conservation Service, Natural Resource Inventory and Cooperative Soil Survey Programs, and with The Nature Conservancy. In addition, coordination can be promoted on important issues such as biodiversity, water quality, demographic information, wildlife, and remote sensing with the following groups, respectively: Natural Heritage Program Cooperators, the U.S. Geological Survey and Environmental Protection Agency, the National Census Bureau, the U.S. Fish and Wildlife Service and State wildlife agencies, and the U.S. Geological Survey GAP Analysis Survey. Other efforts include 10 States and 4 Canadian provinces cooperating in the North American Maple Project through a memorandum of understanding with the USDA Forest Service and the Vermont Forest Ecosystem Monitoring Program.

The Northeastern Area and the States will work to develop a comprehensive picture of forestry in the Northeast and Midwest by implementing the following actions.

- Promote the USDA Forest Service and State forestry agencies as the primary agencies to compile information and report on the status and trends of all forest resources across NA and within respective states.
- NA will facilitate the compilation and assessment of information on C & I from within all branches of the USFS and other agencies for periodic Area-wide reports on forest health and sustainability.
- Cooperate with national efforts and initiate appropriate regional efforts to develop common inventory and monitoring protocols for indicator measurements across state borders and other agency and administrative units. First priority will be to develop consistency or compatibility among the National Forest System (NFS), State and Private Forestry, and State Forestry agencies, and then among multiple agencies within ecological units.
- Work cooperatively to identify information gaps in our ability to monitor progress in achieving sustainability and develop means to address those gaps.
- Fully support ongoing efforts to link and integrate FI & M, and NFS and State forest resource inventories and monitoring. Include the integration of FI & M and NFS and State forest resource inventory plots and plots on other State and Federally owned lands.
- Ensure Northeastern Area and State inventory and monitoring and C & I assessment will feed into the RPA assessment.
- Continue support of ecological classification, mapping, and characterization efforts and use ecological units in the assessment process. Specifically support ecological mapping and characterization efforts across all land at ecoregional and subregional levels, provide technical and financial assistance to initiatives at other scales, initiate cooperative effort to scientifically validate information, and support efforts of scientists and managers to develop interpretations of ecological units for management.
- Support the Unified Watershed Approach by making information available to projects.

Evaluate Existing and Potential State and Private Forestry Conservation, Management, and Protection Programs, Services, and Partnerships

There is consensus that existing State and Private Forestry programs do not meet the total need for public service. Social, economic, and political dynamics are increasingly changing the way the forestry community must do business. Examples are presented in studies such as *Forested Landscapes in Perspective: Prospects and Opportunities for Sustainable Management of America's Nonfederal Forests* (National Research Council 1998), *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future* (President's Council on Sustainable Development 1996), and *Public Programs for Private Forestry: A Reader on Programs and Options* (Sampson and DeCoster 1997).

These social, economic, and political conditions, combined with changes in the extent and integrity of forests due to development, argue that innovative programs and policies are needed to complement traditional Federal and State efforts. Today, the Northeastern Area and the States provide three basic types of service in addition to field inventory and monitoring: resource conservation, management and protection programs; technology transfer activities; and special project development and implementation. Appendix C lists the Forest Service State and Private Forestry Cooperative Forest Management and Protection Programs.

Technology transfer is the conveyance of technical information. It involves drawing on staff expertise to assist in program implementation and to conduct training for resource professionals or landowners, developing and implementing projects which demonstrate key natural resource implementation strategies, synthesizing existing research and data, developing handbooks or modeling tools such as the Northeast Decision Model, or simply providing referrals based on a professional network. Special projects are those which are not associated with regular program activities and are generally focused on resolution of a specific issue or a problem in a specific area. They include examples such as the jointly sponsored Forest Fragmentation Symposium held in Maryland, water quality initiatives in the Chesapeake Bay and New York City Watersheds, dealing with emergencies such as the Asian longhorned beetle infestation in and around New York City and Chicago, and the ice storm damage in northern New England, developing ecological units across the 20-State region, participating in national initiatives such as the USDA Urban Resources Partnership, and facilitating collaborative efforts such as the Northern Forest Lands Project in northern New England and New York, and the Highlands Regional Assessment Project in New Jersey, New York, Pennsylvania, and Connecticut.

Collaboration with State and Federal forest partners and others is essential for program success. Active involvement of county foresters, forest industry, forest landowners, and private forest interest groups (e.g., the National Woodland Owners Association and the Association of Consulting Foresters) is also essential. The need for a landscape and even larger scale sustainability focus in mixed ownerships, which is sensitive to individual and local needs and trends, makes the development of voluntary partnerships and cooperation very important. Resulting partnerships will provide opportunities to learn together, reach creative solutions, compound effectiveness, and reach mutual goals. This can save time, money, and duplication of efforts, and can avoid confrontation and backsliding pitfalls. This collaboration must begin early to articulate a clear policy of sustainable forest management and a guiding framework to provide coherent direction to all cooperative forestry programs.

The Northeastern Area and the States must increase efforts to facilitate cooperation and foster innovative projects that deal with emerging issues and resource conflicts in a cost-effective manner. The contributions and the value of various partners' programs and initiatives must be recognized. That includes both traditional programs such as the Tree Farm program, and newer initiatives such as the American Forest and Paper Association's Sustainable Forestry Initiative, the National Woodland Owners' Green Tag Forestry, the Forest Stewardship Council's Green Certification, and the International Standards Organization (ISO) standards.

The Northeastern Area and the States, in collaboration with various partners, will implement the following actions to increase State and private forest management effectiveness.

- Facilitate and participate in the peer review of the Northeastern Area report on forest health and sustainability and in the evaluation of its capacity to measure C&I at multiple scales.
- Work with partners and stakeholders to identify existing program contributions to each sustainability goal at local, State, and regional levels. Prepare recommendations for the Northeastern Area Strategic Plan on how to align and integrate existing Area programs and activities to achieve sustainable urban and rural forests.
- Increase the viability of the State forest resource planning program in the Northeastern Area and utilize State and Federal program staff to ensure C&I assessments are appropriately linked to Area and State resource planning and policy setting initiatives.
- Use C&I as a framework for reporting program accomplishments and outcomes under the Government Performance and Results Act of 1993 and the RPA.
- Provide technology transfer services in the area of green certification and ISO standards implementation.
- Evaluate other sustainable forest management efforts in various sectors and programs and integrate them where appropriate. Develop and maintain collaborative relationships and processes with stakeholders and partners involved in sustainable forest management efforts.
- Identify, address, and involve all forest ownerships (National Forest System, Department of Defense, Department of Interior, Tribes, State, county, forest industry, nonindustrial private) in initiatives and programs to achieve sustainable forest management. Identify existing and new partners and key players with desires to achieve sustainable forest management.
- Fund special projects and demonstrations of sustainable forest management.

Provide Education and Communication Opportunities for Professionals and the Public

Forest management has environmental, social, economic, and political implications. Professionals operating in today's environment need to have a broader range of skills and expertise at their disposal than any time in the past. To be relevant, credible, and judged trustworthy, they must have the best scientific and technical knowledge available and the communication skills to lead and implement efforts to conserve and sustainably manage the forests. The Northeastern Area and the State forestry agencies must be well informed on both technical and sociopolitical fronts forming around sustainable forest issues.

The Northeastern Area and the State forestry agencies will provide training and educational opportunities so that resource professionals are knowledgeable and able to provide clear guidance and consistent messages to their colleagues, clients, and the public. Stakeholders are included at all stages of program and project planning and implementation so that decisions are made with full knowledge of public expectations. Forest resource managers are able to convey clearly to decisions makers the environmental, social, economic, and sometimes political ramifications of their management recommendations. In this information-rich era it is also important that communicators be supported by the technology and communication tools needed to work with an ever increasing population.

Actions to implement the education and communication measure include the following.

- Upon completion of the first report on forest health and sustainability in the Northeast and Midwest, develop a communication plan to share and explain the resulting information to a wide range of people, including landowners, managers, and public officials.
- Identify key messages to communicate.
- Develop a web page or computer networking system to disseminate information on the origins of sustainable forest management, C&I, and the forestry community's response to this challenge to professionals and the general public.
- Strengthen communication networks among partners to share ideas, results, and technical expertise, and provide specific mechanisms for State forest land managers to network.
- Develop a publication to clarify the definitions of sustainable forest management.
- Develop partnerships to create educational programs and materials on sustainable forest management for internal and external use.
- Identify and share examples of sustainable forest management and practices among Federal agencies, States, and private landowners.
- Develop assessment tools for field personnel to communicate land and forest practice contributions to sustainability.
- Assess the sustainable forest management training and development needs across the Area and the States and work collaboratively with cooperative extension, universities, and other partners to meet them.

Conclusion

The Forest Service and the State forestry agencies have critical roles to play in the conservation and sustainable management of forests. The strategy outlined above recognizes that business as usual is not enough to solve the complex problems encountered as more pressure is placed on the natural environment by an increasing population. Clear, accurate information on the state of the forest resource and the life cycles it supports is needed for decision making. The Northeastern Area and State resource professionals will work to facilitate the collection, evaluation, and dissemination of information and to foster collaborative approaches to the conservation and sustainable management of the forest resource and the quality of life which a healthy environment can support.

The Northeastern Area/NAASF initiative has four major aspects.

1. Adoption of a framework of C&I of sustainability which provides information on the condition of the forest resource and the balance between human and environmental needs. This information is not reserved for natural resource professionals but is shared widely.
2. Enhancing inventory, monitoring, and assessment of the forest resource and related social and economic systems, and facilitating cooperation among the many agencies and organizations with overlapping responsibilities.
3. Evaluation and realignment of resources within the agency to support sustainable forest management.
4. Development of effective communication and education approaches and processes for a broader array of stakeholders and professionals.

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Appendix A

The Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests

***Criterion 1*: Conservation of biological diversity**

Ecosystem diversity

1. Extent of area by forest type relative to total forest area
2. Extent of area by forest type and by age class or successional stage
3. Extent of area by forest type in protected area categories as defined by International Union for the Conservation of Nature or other classification systems
4. Extent of areas by forest type in protected areas defined by age class or successional stage
5. Fragmentation of forest types

Species diversity

6. The number of forest dependent species
7. The status (rare, threatened, endangered, or extinct) of forest dependent species at risk of not maintaining viable breeding populations, as determined by legislation or scientific assessment

Genetic diversity

8. Number of forest dependent species that occupy a small portion of their former range
9. Population levels of representative species from diverse habitats monitored across their range

***Criterion 2*: Maintenance of productive capacity of forest ecosystems**

10. Area of forest land and net area of forest land available for timber production
11. Total growing stock of both merchantable and nonmerchantable tree species on forest land available for timber production
12. The area and growing stock of plantations of native and exotic species
13. Annual removal of wood products compared to the volume determined to be sustainable
14. Annual removal of nontimber forest products (e.g., fur bearers, berries, mushrooms, game) compared to the level determined to be sustainable

***Criterion 3*: Maintenance of forest ecosystem health and vitality**

15. Area and percent of forest affected by processes or agents beyond the range of historic variation (e.g., by insects, disease, competition from exotic species, fire, storm, land clearance, permanent flooding, salinization, and domestic animals)
16. Area and percent of forest land subjected to levels of specific air pollutants (e.g., sulfates, nitrate, ozone) or ultraviolet B that may cause negative impacts on the forest ecosystem
17. Area and percent of forest land with diminished biological components indicative of changes in fundamental ecological processes (e.g., soil, nutrient cycling, seed dispersion, pollination) and/or ecological continuity

***Criterion 4*: Conservation and maintenance of soil and water resources**

18. Area and percent of forest land with significant soil erosion
19. Area and percent of forest land managed primarily for protective functions (e.g., watersheds, flood protection, avalanche protection, riparian zones)
20. Percent of stream kilometers in forested catchments in which stream flow and timing has significantly deviated from the historic range of variation
21. Area and percent of forest land with significantly diminished soil organic matter and/or changes in other soil chemical properties
22. Area and percent of forest land with significant compaction or change in soil physical properties resulting from human activities
23. Percent of water bodies in forest areas (e.g., stream kilometers, lake hectares) with significant variance of biological diversity from the historic range of variability
24. Percent of water bodies in forest areas (e.g., stream kilometers, lake hectares) with significant variation from the historic range of variability in pH, dissolved oxygen, levels of chemicals (electrical conductivity), sedimentation, or temperature change
25. Area and percent of forest land experiencing an accumulation of persistent toxic substances

***Criterion 5*: Maintenance of forest contribution to global carbon cycles**

26. Total forest ecosystem biomass and carbon pool, and if appropriate, by forest type, age class, and successional stages
27. Contribution of forest ecosystems to the total global carbon budget, including absorption and release of carbon
28. Contribution of forest products to the global carbon budget

***Criterion 6*: Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies**

Production and consumption

29. Value and volume of wood and wood products production, including value added through downstream processing
30. Value and quantities of production of nonwood forest products
31. Supply and consumption of wood and wood products, including consumption per capita
32. Value of wood and nonwood products production as a percentage of gross domestic product
33. Degree of recycling of forest products
34. Supply and consumption/use of nonwood products

Recreation and tourism

35. Area and percent of forest land managed for general recreation and tourism, in relation to the total area of forest land

36. Number and type of facilities available for general recreation and tourism, in relation to population and forest area

37. Number of visitor days attributed to recreation and tourism, in relation to population and forest area

Investment in the forest sector

38. Value of investment, including in forest growing, forest health and management, planted forests, wood processing, recreation, and tourism

39. Level of expenditure on research and development, and education

40. Extension and use of new and improved technology

41. Rates of return on investment

Cultural, social, and spiritual needs and values

42. Area and percent of forest land managed in relation to the total area of forest land to protect the range of cultural, social, and spiritual needs and values

43. Nonconsumptive-use forest values

Employment and community needs

44. Direct and indirect employment in the forest sector and the forest sector employment as a proportion of total employment

45. Average wage rates and injury rates in major employment categories within the forest sector

46. Viability and adaptability to changing economic conditions of forest dependent communities, including indigenous communities

47. Area and percent of forest land used for subsistence purposes

Criterion 7: Legal, institutional, and economic framework for forest conservation and sustainable management

Extent to which the legal framework (laws, regulations, guidelines) supports the conservation and sustainable management of forests, including the extent to which it:

48. Clarifies property rights, provides for appropriate land tenure arrangements, recognizes customary and traditional rights of indigenous people, and provides means of resolving property disputes by due process

49. Provides for periodic forest-related planning, assessment, and policy review that recognizes the range of forest values, including coordination with relevant sectors

50. Provides opportunities for public participation in public policy and decision making related to forests and public access to information

51. Encourages best practice codes for forest management

52. Provides for the management of forests to conserve special environmental, cultural, social, and/or scientific values

Extent to which the institutional framework supports the conservation and sustainable management of forests, including the capacity to:

53. Provide for public involvement activities and public education, awareness and extension programs, and make available forest-related information
54. Undertake and implement periodic forest-related planning, assessment, and policy review, including cross-sectoral planning and coordination
55. Develop and maintain human resource skills across relevant disciplines
56. Develop and maintain efficient physical infrastructure to facilitate the supply of forest products and services and support forest management
57. Enforce laws, regulations, and guidelines

Extent to which the economic framework (economic policies and measures) supports the conservation and sustainable management of forests through:

58. Investment and taxation policies and a regulatory environment which recognize the long-term nature of investments and permit the flow of capital in and out of the forest sector in response to market signals, nonmarket economic valuations, and public policy decisions in order to meet long-term demands for forest products and services
59. Nondiscriminatory trade policies for forest products

Capacity to measure and monitor changes in the conservation and sustainable management of forests, including:

60. Availability and extent of up-to-date data, statistics, and other information important to measuring or describing indicators associated with the seven criteria
61. Scope, frequency, and statistical reliability of forest inventories, assessment, monitoring, and other relevant information
62. Compatibility with other countries in measuring, monitoring, and reporting on indicators

Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services, including:

63. Development of scientific understanding of forest ecosystem characteristics and functions
64. Development of methodologies to measure and integrate environmental and social costs and benefits into markets and public policies, and to reflect forest-related resource depletion or replenishment in national accounting systems
65. New technologies and the capacity to assess the socioeconomic consequences associated with the introduction of new technologies
66. Enhancement of ability to predict impacts of human intervention on forests
67. Ability to predict impacts on forests of possible climate change

(USDA Forest Service 1997)

Appendix B

National Hierarchical Framework of Ecological Units

General correspondence between ecological units, scale of application, and potential uses within the National Hierarchical Framework of Ecological Units (Cleland and others 1997).*

Application Scale	Purpose of Use	Ecological Units
Global, continental, regional levels	Long-term, broad scale planning and assessment, broad applicability for modeling and sampling	Domain Division Province
Multiforest, State or multistate projects, river basin projects	Strategic and multi-agency analysis and assessment, data aggregation, generating and testing research hypotheses, technology transfer/data extrapolation	Section Subsection
Regional, forest, State, multicounty, watershed, riparian or wildlife corridors	Multiple resource assessment and analysis, tactical and long-term operational planning, data aggregation, research and monitoring design	Ecological Land Type Ecological Land Type Phase

*The boundaries for ecological unit maps do not change as do historical or current condition maps, which makes them ideal for establishing baseline conditions and predicting the possible effects of a variety of management activities. These features makes them an ideal tool for building partnerships with other agencies and organizations.

Appendix C

State and Private Forestry Cooperative Forest Management and Protection Programs

Program	Description
State Forest Resource Planning	Promotes the development of comprehensive state forest resource plans which integrate multiple values and uses for the long-term benefit of society and the natural resources people depend upon.
Urban and Community Forestry	Promotes planning for and management of forest and related resources in populated areas to achieve locally identified social, economic, and environmental goals.
Stewardship and Stewardship Incentive	The goal of these programs is to ensure landowners apply environmental and economic resource management principles to benefit themselves, future landowners, and the public. Through the Stewardship program, landowners are encouraged to develop a professionally prepared management plan. In addition, the incentive portion of the program allows landowners to cost-share development and implementation of their land management plan.
Economic Action	Works to help communities, businesses, groups, and individuals use renewable natural resources as a catalyst to create diversified and sustainable economic activity.
Natural Resource Conservation Education	Promotes understanding of natural resources and ecosystems—their interrelationships, conservation, use, management, and value to society. Promotes critical thinking skills that enable people to recognize the complexity of resource issues and to make choices within social, political, scientific, and economic realities and foster individual responsibility to conserve, preserve, and wisely use our natural resources.
River Basin and Watershed Planning	Works in specially designated watersheds to help local organizations develop environmentally, socially, and economically sound plans to restore impaired watersheds and protect against flooding. Provides technical and financial assistance to landowners in installing forestry works or improvement.
Forest Legacy	Uses the purchase of development rights from willing landowners to prevent conversion of environmentally important forest lands to nonforest uses.
Forest Health Protection	Ensures that forest health concerns are considered in forest planning and management; identifies, improves and transfers new technologies; provides assistance in coordination of regional issues; and produces information that will inform land managers on forest health problems.

Cooperative Fire Protection	Strengthens rural fire prevention and control, and rural community fire protection, and facilitates the loan of Federal excess personal property to State forestry agencies and cooperators for wildland and rural community fire protection.
Resource Conservation and Development	Promotes the conservation, development, and utilization of natural resources to improve economic conditions and to enhance the quality of life in designated multicounty geographical areas.

Appendix D

Acronyms

C&I	The Montreal Process 7 Criteria and 67 Indicators
FI&M	USDA Forest Service, Forest Inventory and Monitoring Program
FHM	USDA Forest Service, Forest Health Monitoring Program
FI & M	USDA Forest Service, Forest Inventory and Monitoring
ISO	International Standards Organization
NAASF	Northeastern Area Association of State Foresters (which includes 20 States in the Northeast and Midwest)
NASF	National Association of State Foresters
NFS	USDA Forest Service, National Forest System
RPA	Forest and Rangelands Renewable Resources Planning Act of 1974
USDA	United States Department of Agriculture

Appendix E

Committee on the Role of the USDA Forest Service Northeastern Area and States in Sustainable Forest Management

This joint committee was charged with providing guidance and recommendations to the Northeastern Area and the NAASF on implementation of sustainable forest management.

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